

AIR TECHNOLOGY

**AL-KO**

QUALITY FOR LIFE



VENTILATION AND AIR CONDITIONING CENTRAL UNITS

# AL-KO HYDRO-OPT®

Systems for optimal heat  
and cold recovery



[alko-airtechnology.com](http://alko-airtechnology.com)

# Sustainable Technology for a Good Indoor Climate

For over 50 years, AL-KO Air Technology has been ensuring good air quality wherever people come together. As one of the leading manufacturers of air handling units, we offer individually tailored solutions for the complex requirements of various application areas in the proven AL-KO quality.

## AL-KO HYDRO-OPT®

AL-KO Air Technology offers HYDRO-OPT closed-loop systems (KVS) that meet the highest efficiency requirements. Depending on the application, a heat recovery efficiency of up to 80% can be achieved. Only high-performance heat exchangers are used, whose performance has been confirmed by an independent testing institute.

AL-KO HYDRO-OPT® is the best possible solution for heat recovery when supply and exhaust air need to be spatially separated. HYDRO-OPT hydraulic stations are available in different performance and comfort levels and for various corrosion protection classes.

## Advantages of AL-KO HYDRO-OPT®

- The certified design program KlimaSoft® uses RLT and Eurovent-certified heat exchangers – with the highest quality and hygiene.
- Cost and time savings on-site through pre-piped heat exchangers in the unit.
- Optional corrosion protection coating in class C5 for corrosive requirements from the exhaust air.

## Function Overview – HYDRO-OPT S and HYDRO-OPT M at a Glance

Function Description	HYDRO-OPT S	HYDRO-OPT M
Number of supply air units 1.9 m <sup>3</sup> /h	1	1
Number of exhaust air units 4,9 m <sup>3</sup> /h	1	3
Intelligent pressure-independent control of multiple exhaust air units		✓
Control cabinet with controller and inverter		✓
Control integrated in the inverter	✓	
Main switch	✓	✓
Power control with pump + valve	✓	✓
Air volume-dependent power control	Control via external regulation is possible	Used by intelligent DeltaT control implemented
Release signal	✓	✓
Fault signal	✓	✓
Control 0--10 V	✓	✓
System pressure monitoring warning		✓
System pressure monitoring shutdown	✓	✓
Frost protection control	✓	✓
Circulation increase	✓	✓
Bypass valve	✓	✓
Bus connection BACnet IP		Optional
Bus connection BACnet MSTP	Optional	Optional
Bus connection Modbus RTU	Integrated	Integrated
Bus connection Modbus IP		Optional
Controllable pump	✓	✓
Double pump		✓
Pump blockage protection		✓
Pump vent valve	✓	✓
Display of supply temperature	✓	✓
Display of return temperature	✓	✓
Flow meter	Mechanical display integrated	Electrical display on the display
Manometer	✓	✓
Expansion vessel and safety valve	✓	✓
Filling and draining device	✓	✓
Dirt trap		✓

- Easily accessible condensate tray, unobstructed drainage of liquids
- Sufficient space for inspection and cleaning

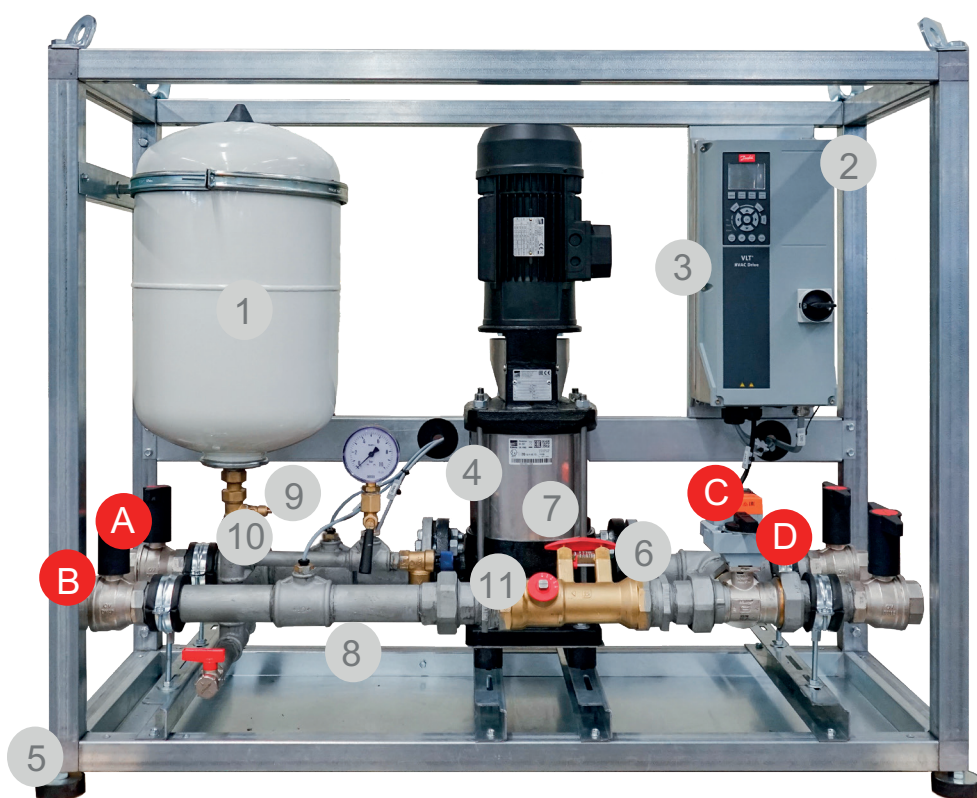
# HYDRO-OPT

## Standard Sizes S and M

AL-KO HYDRO-OPT is available in the versions HYDRO-OPT S and HYDRO-OPT M. Both versions operate with high energy efficiency and are economical in operation. Pre-piped heat exchangers in the unit bring time and cost savings during installation, and inspection and cleaning are easily manageable.

### AL-KO HYDRO-OPT S

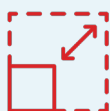
HYDRO-OPT S supplies one exhaust air unit with recovered heat or cold. The integrated control monitors the operating states, regulates the brine circulation amount, and ensures highly efficient heat and cold recovery in the closed-loop system (KVS).



### Your Advantages



Optimal price-performance ratio



Compact design, small footprint of 0.5 m<sup>2</sup> for all models



Display of brine flow with a single handle

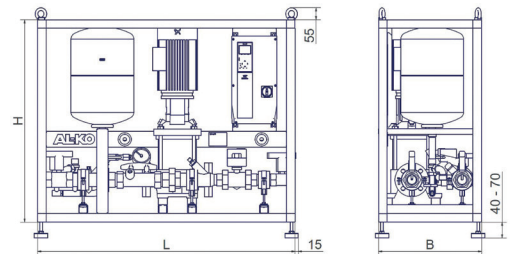


Ready for connection (electrical and hydraulic) – flexible connection from all sides without specialist knowledge

## Sizes HYDRO-OPT S

Model	Connections IG DN	Length mm	Width mm	Hight mm	Weight kg
<b>S 0.5</b>	20	1178	489	971	105
<b>S 1.5</b>	25	1178	489	971	110
<b>S 3.5</b>	32	1178	489	971	119
<b>S 6.5</b>	40	1178	489	971	133
<b>S 11</b>	50	1178	489	971	153

Model m <sup>3</sup>	Flow Rate m <sup>3</sup> /h	Max. Connection Power		
		V	kW	A
<b>S 0.5</b>	0.35 – 0.55	3 – 400	0.37	1.00
<b>S 1.5</b>	0.56 – 1.50	3 – 400	0.37	1.00
<b>S 3.5</b>	1.51 – 3.50	3 – 400	1.1	2.50
<b>S 6.5</b>	3.51 – 6.50	3 – 400	1.5	3.15
<b>S 11</b>	6.51 – 11.00	3 – 400	2.2	4.45



- A** From exhaust air heat exchanger with shut-off valve
- B** To exhaust air heat exchanger with shut-off valve
- C** To supply air heat exchanger (supply) with shut-off valve
- D** From supply air heat exchanger (return) with shut-off valve
- 1** Pressure expansion vessel
- 2** Carrying frame
- 3** Frequency converter / display / control / main switch
- 4** Circulation pump with vent valve
- 5** Leveling foot
- 6** Power control ball valve with actuator
- 7** Return temperature sensor (supply air heat exchanger)
- 8** Drip tray
- 9** Supply temperature sensor (supply air heat exchanger)
- 10** Safety valve / manometer / system pressure monitor
- 11** Flow rate indicator



Operation is carried out with the target volume flow via branded frequency converter (Danfoss)



If necessary, complete disconnection of the air conditioning and ventilation system with a single handle



Quick and easy maintenance



Contributes significantly to energy savings, CO<sup>2</sup> reduction, and operating cost reduction

## AL-KO HYDRO-OPT M

The HYDRO-OPT M size offers significantly more functionality and is designed, for example, to supply up to three exhaust air units with the recovered heat or cold when connected to a supply air unit. By combining innovative technologies, a cascading control concept, and speed-controlled pumps, HYDRO-OPT M meets the highest energy standards. Airside sensors are not required, as the control is based on temperature differences ( $\Delta T$ ) between the supply and return (brine) of the heat exchangers. This reduces the number of sensors needed and simultaneously minimizes susceptibility to faults, as more vulnerable air differential pressure measurement systems are avoided. This makes AL-KO HYDRO-OPT M a robust and thus cost-efficient solution.

## Basic and Additional Functions

The integrated control monitors the operating states and regulates the optimal brine circulation amount via a pressure-controlled pump and intelligent energy valves – saving up to 30% pump power. The icing of the exhaust air heat exchanger and freezing of an optional heat supply are prevented by control technology – optionally controlled via the brine temperature or dew point sensors in the exhaust air. The amount of circulating brine is continuously recorded and can be used for heat quantity measurement together with the temperature measurement. The saved energy is also measured. The hydraulic balance is automatically achieved by the energy valves used. The diverse possibilities for system expansion include, among others, heat and cold supply as well as dehumidification cold recovery or indirect evaporative cooling. The temperature management can be taken over for both individual HVAC units and multiple HVAC units in a network.

## Size HYDRO-OPT M

Model	Media Volume Flow Vol m <sup>3</sup> /h	Connections		DP AWT 1-3			EP AWT 1-3		
		Exhaust Air DN (IG)	Supply Air DN (IG)	Lenght mm	Width mm	Hight mm	Lenght mm	Width mm	Hight mm
<b>M2</b>	0.5 – 1.9	32	32	1989.0	841.5	1453.5	1759.5	841.5	1453.5
<b>M 5</b>	2.0 – 4.9	40	40	2142.0	841.5	1606.5	1759.5	841.5	1606.5
<b>M 10</b>	5.0 – 9.9	50	50	2142.0	994.5	1759.5	1912.5	994.5	1759.5
<b>M 15</b>	10.0 – 14.9	65	65	2524.5	1224.0	2142.0	2218.5	1224.0	2142.0
<b>M 25</b>	15.0 – 25.0	80	80	2677.5	1683.0	2524.5	2371.5	1683.0	2524.5

## Your Advantages



Supports energy supply, dehumidification cold recovery, and combined systems from one supply air unit and up to three exhaust air units



Efficiency optimization through dynamic independent brine flow control via DeltaT management



Temperature transfer efficiency of over  $\eta \leq 80\%$



Compact design



- 1 Bypass valve
- 2 Cold supply (not visible)
- 3 Heat supply
- 4 Temperature sensor
- 5 Frequency converter pump
- 6 Pressure sensor
- 7 KFE valve
- 8 Manometer
- 9 Shut-off damper
- 10 Check valve
- 11 High-pressure pump
- 12 KFE valve
- 13 Shut-off damper
- 14 Safety valve
- 15 Power valve
- 16 Pressure sensor
- 17 Temperature sensor
- 18 Expansion vessel
- 19 Control valve
- 20 Exhaust air heat exchanger
- 21 Exhaust air heat exchanger return
- 22 Exhaust air heat exchanger supply
- 23 Supply air heat exchanger return
- 24 Supply air heat exchanger supply
- 25 AL-KO Touch Control
- 26 Remote control frequency converter

## Individual Configuration Possible

Typical for AL-KO: Thanks to a wide range of optional components, customers receive an individually configured system. These include, among others, air flow meters on the HVAC unit, a second pump for increased reliability, complete piping in stainless steel, or touch panels in three different sizes. For connection to a building bus system, the interfaces Modbus IP / RTU and BACnet IP / MSTP are available.



If needed, complete decoupling of the air conditioning and ventilation system with a single handle



Commissioning and support by AL-KO specialist staff



Contributes significantly to energy savings and operating cost reduction



Electrical and hydraulic connections ready for installation (excluding optional airside sensors)

# AL-KO

QUALITY FOR LIFE

## AL-KO AIRTECH

AL-KO Airtech specializes in the manufacturing and distribution of ventilation and extraction systems. Airtech comprises **AL-KO Air Technology** and **AL-KO Extraction Technology**. These divisions develop and produce customized ventilation and air handling systems, as well as a broad spectrum of industrial extraction systems for diverse areas of application. What started out as a village blacksmith's shop in 1931 is now an international brand. Then and now, our brand promise "QUALITY FOR LIFE" stands for unique product and service quality.

### AL-KO Air Technology

- 50 years of experience in ventilation and air handling technology
- More than 10,000 ventilation and air handling units per year
- All systems in time-proven AL-KO quality
- Tailor-made for customer-specific requirements
- All expertise from a single source
  - Planning and consultation
  - Digital tools
  - Air and climate technology
  - Plant control
  - Comprehensive service packages

### AL-KO THERM GMBH

#### AIR TECHNOLOGY

Hauptstraße 248 – 250  
89343 Jettingen-Scheppach  
Tel.: +49 8225 39 2260  
klima.technik@alko-air.com

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